






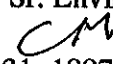
South Florida Water Management District

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045
TDD (561) 697-2574

Memorandum

To: SFWMD/Seminole Agreement Working Group

Through: Leslie Wedderburn, Director, Water Resources Evaluation Dept. 
Linda Lindstrom, Director, Resource Assessment division, WRED 

From: Tim Bechtel, Sr. Supv. Environ. Scientist, Resource Assessment Division, WRED 
Cheol Mo, Sr. Environ. Scientist, Resource Assessment Division, WRED 

Date: December 31, 1997

Subject: Final Second Semiannual Progress Report – December 1997

The enclosed second semiannual progress report has been prepared in accordance with the SFWMD/Seminole Tribe Agreement, Paragraph A.3. The report presents the data collected and the results of the total phosphorus load calculations for the period June 1, 1996 through August 31, 1997.

Please contact Tim Bechtel if you have any questions or suggestions regarding this final report.

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FINAL
Second Semiannual Progress Report

**Total Phosphorus Load Calculations for Sites
Stipulated in the SFWMD/Seminole Tribe Agreement**

By

**Timothy J. Bechtel, Sr. Supv. Environmental Scientist
and
Cheol Mo, Sr. Environmental Scientist**

December 31, 1997

**Resource Assessment Division
Water Resources Evaluation Department
South Florida Water Management District
West Palm Beach, Florida**

Submitted to

SFWMD/ Seminole Tribe Agreement Working Group

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Introduction

The Agreement between the South Florida Water Management District (the District) and the Seminole Tribe of Florida (the Tribe), executed on January 17, 1996, requires periodic monitoring of the quality of surface water entering, originating on and leaving the Big Cypress Seminole Indian Reservation (the Reservation) to ensure compliance with applicable water quality standards imposed by law and that the overall surface water quality within the Reservation is not adversely impacted.

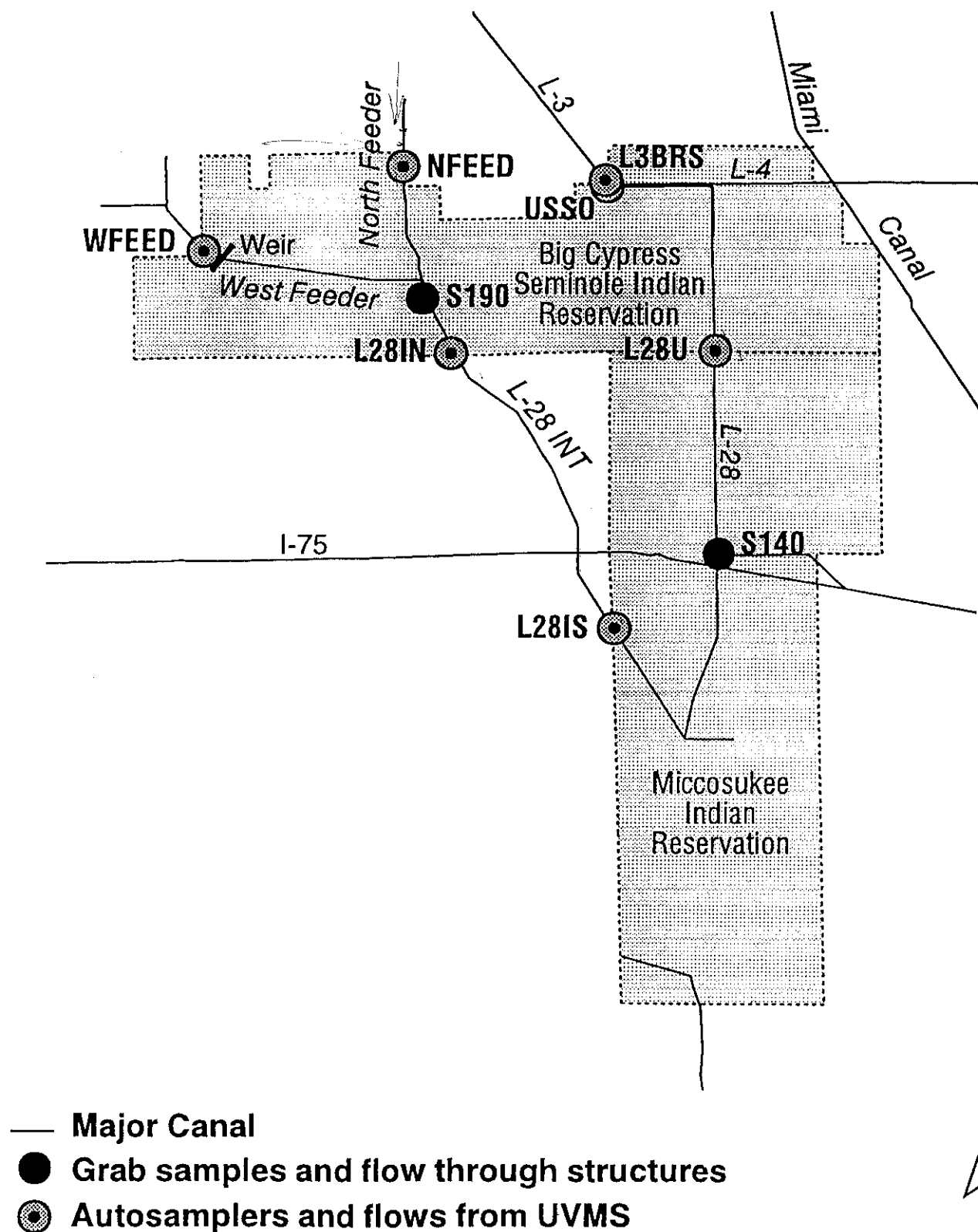
Pursuant to the Agreement, the District, with the cooperation of the Tribe, initiated a water quality monitoring program in June of 1996. To help the SFWMD/Seminole Agreement Working Group track the results and progress of this monitoring effort, the District prepares a semiannual report that summarizes and analyzes the water quality and flow data collected since the implementation of the program.

This second semiannual progress report is for the period March 1, 1997 through August 31, 1997. However, the total phosphorus loads calculated at six of the nine monitoring sites also include the total phosphorus load data presented in the first semiannual report. This was done to provide a continuous picture of the seasonal variation in phosphorus loads over the first 15 months of the monitoring program. The Seminole Tribe began their auto-sampler data collection at L28IN and L28U August 21, 1997. This data will be included in the next report. As of August 31, 1997, total phosphorus data were not yet available at the Miccosukee Tribe site L28IS. The USGS has been collecting flow data at the L28IN, L28IS and L28U sites since March 1, 1997. The USGS flow data is included in this report in two graphs comparing the flow measured at the L28I and L28U canal sites to flow measured by the District at upstream sites. Also included in this report are tables summarizing all the water quality data collected through August 1997 at the six sites monitored by the District. No data for the WFEED site are presented in this report because of problems associated with the sampling location above the weir. The problems are discussed in the results section of this report.

Methods

Figure 1 is a location map showing the water quality sampling and flow measurement sites that were established for the Agreement. The NFEED, WFEED, USSO, L3BRS, S190 and S140 sites are maintained and sampled by the District. The NFEED, USSO, and L3BRS sites are equipped with ultrasonic velocity meters (UVMs) to measure flow and auto-samplers to collect flow proportional water quality samples. The WFEED site uses a weir equation to calculate flow and trigger a water quality sampler. Since June 1997 grab samples have been collected at the NFEED and WFEED sites to supplement the auto-sampler data. In October 1997 grab sampling was also initiated at the WFEED weir. Flow through the S190 spillway and the S140 pump station complex is calculated using structure-specific equations. At both S190 and S140 water quality data are collected by grab sampling procedures. The sites at L28IN and L28U are equipped with UVMS installed and maintained by the USGS and auto-samplers supplied and operated by the Seminole Tribe. The Miccosukee Tribe has a monitoring site located at L28IS which is equipped with a UVM supplied by the USGS and a Tribe-owned auto-sampler.

Figure 1: SFWMD/Seminole Agreement Water Quality and Flow Sampling Sites



seminole.apr

Results of Phosphorus Load Calculations

The results of the water flow analyses and the computed total phosphorus loads for the period June 1, 1996 through August 31, 1997 at sites NFEED, USSO, L3BRS, S190 and S140 are presented in Tables 1a and 1b. These data were used to create the total phosphorus load graphs presented below for each of the sites. Table 2 summarizes the monthly flows, total phosphorus loads and total phosphorus flow weighted mean concentrations at the same sites for the current reporting period, March 1, 1997 through August 31, 1997.

L3BRS

The results for L3BRS are presented in Figure 2. The total load for the entire reporting period was 51,857 kg. A peak load of 17,046 kg occurred in June 1996 while minimum loads were generated during the dry period beginning in December 1996 and ending in the middle of April 1997. The associated flow weighted mean concentration of total phosphorus data collected by the auto-sampler was 234 ppb.

USSO

As discussed in the last report the sample intake line for the auto-sampler at the USSO site was too close to the bottom of the canal. For this reason, the auto-sampler data collected through February 1997 were not used in computations. The total phosphorus load from June 1, 1996 through February 28, 1997 was calculated to be 3712 kg using the grab sample data (Figure 3). From March 1 to August 31, 1997 auto-sampler data was used to calculate a load of 3020 kg. The total load for the entire reporting period was 6732 kg. The associated flow weighted mean concentration of total phosphorus data collected by grab sample from June 1, 1996 through February 28, 1997 was 83 ppb. The flow weighted mean concentration of the auto-sampler data collected from March 1 through August 31, 1997 was 80 ppb.

WFEED

The original sampling dock for flow and water quality monitoring was built 80 yards upstream of the weir on the south side of West Feeder Canal. From the time that the UVM was installed to monitor flow, District hydrologists were not able to develop a satisfactory calibration of the equipment to the observed flow in the canal at the monitoring site. Since the water quality auto-sampler is triggered by a specific flow volume, it was questioned whether the water samples being collected were flow proportional as well as representative of the water flowing over the weir. Beginning October 10, 1996 the flow equation for the weir was used to trigger the auto-sampler. The weir equation, while much more accurate than the UVM, has been judged to overestimate the high flows that occurred in October and early November 1996. The weir itself is a sheet pile weir and has the tendency to trap floating vegetation due to its irregular shape. The trapped vegetation reduces the weir effective length to the extent that flow can be misrepresented by the weir equation. Stream gauging done to date has not yielded enough data to justify modifying the existing weir equation.

The location of the auto-sampler also caused concern as to whether the samples being collected were representative of the water going over the weir. The auto-sampler intake

Table 1a. Seminole/SFWMD Agreement total phosphorus (TP) concentration and water flow data summary for the period: June 1, 1996 - August 31, 1997.

For nfeed:

| term | clab | glab | qlabdbkey, qsign, itype, iymdcomp |
|-------|-------|------|-----------------------------------|
| nfeed | NFEED | none | NFEED_O 16754 1 1 19960619 |

Flow data from 19960601 to 19970831
 Number of no flow days = 154
 Number of positive flow days = 251
 Total flow (cfs-d) = 16155.007
 Number of negative flow days = 52
 Total negative flow(cfs-d) = 1267.760
 No missing flow data

Grab sample n = 12
 first datum : 19970612
 last datum : 19970828
 average value (arithmetic mean of the samples) = 150 ppb
 range = 47 to 297 ppb
 grab sample associated with positive flow = 12
 flow weighted mean for data with positive flow = 168 ppb
 regression of grab: TP (ppb) = 100.5684 + 0.706166*flow (cfs)
 load ratio of comp:grab = 0.935517

Composite sample n = 46
 first datum : 19960626
 last datum : 19970904
 composite sample missing more than 2 weeks after 19960531
 composite sample missing more than 2 weeks after 19970220
 composite sample missing more than 2 weeks after 19970424
~~average value (arithmetic mean of the samples) = 123 ppb~~
 range = less than 4 (below detection limit) to 351 ppb
 flow weighted mean for data = 190 ppb
 regression of comp: TP (ppb) = 78.0357 + 1.20071*flow (cfs)

For USSO:

| term | clab | glab | qlab | dbkey qsign itype |
|------|------|------|--------|-------------------|
| usso | USSO | USSO | USSO_O | 16749 1 0/2 |

Flow data from 19960601 to 19970831
 Number of no flow days = 0
 Number of positive flow days = 457
 Total flow (cfs-d) = 33203.766
 Number of negative flow days = 0
 No missing flow data

Grab sample n = 24
 first datum : 19960613
 last datum : 19970821
 average value (arithmetic mean of the samples) = 99 ppb
 range = 30 to 214 ppb

Table 1a. (continued)

grab sample with positive flow = 24
flow weighted mean for data with positive flow = 100 ppb
regression of grab: TP (ppb) = $97.8998 + 0.0145731 \cdot \text{flow (cfs)}$
load ratio of comp:grab = 0.862219

Composite sample n = 23

first datum : 19970312
last datum : 19970813
average value = 95 ppb
range = 31 to 226 ppb
flow weighted mean for data = 80 ppb
regression: TP conc (ppb) = $137.618 - 0.524306 \cdot \text{flow (cfs)}$

For S190:

| term | clab | glab | qlab | dbkey | qsign | itype |
|------|------|------|--------|-------|-------|-------|
| s190 | none | S190 | S190_S | 15987 | 1 | 0 |

Flow data from 19960601 to 19970831
Number of no flow days = 210
Number of positive flow days = 247
Total flow (cfs-d) = 42817.160
Number of negative flow days = 0
No missing flow data

Grab sample n = 22

first datum : 19960613
last datum : 19970821
average value (arithmetic mean of the samples) = 75 ppb
range = 17 to 244 ppb
grab sample with positive flow = 13
flow weighted mean for data with positive flow = 134 ppb
regression: TP conc (ppb) = $46.0243 + 0.281875 \cdot \text{flow (cfs)}$

For L3BRS:

| term | clab | glab | qlab | dbkey | qsign | itype | iyndcomp |
|-------|---------|-------|---------|-------|-------|-------|----------|
| l3brs | USL3BRS | L3BRS | L3BRS_O | 16245 | 1 | 1 | 19841030 |

Flow data from 19960601 to 19970831
Number of no flow days = 0
Number of positive flow days = 448
Total flow (cfs-d) = 91595.555
Number of negative flow days = 9
Total negative flow(cfs-d) = 55.100
No missing flow data

Table 1a. (continued)

Grab sample n = 24

first datum : 19960613
last datum : 19970821
average value (arithmetic mean of the samples) = 137 ppb
range = 24 to 425 ppb
grab sample with positive flow = 24
flow weighted mean for data with positive flow = 217 ppb
regression: TP conc (ppb) = $64.6077 + 0.297125 \cdot \text{flow (cfs)}$
load ratio of comp:grab = 1.00359

Composite sample n = 53

first datum : 19960606
last datum : 19970821
composite sample missing more than 2 weeks after 19961211
composite sample missing more than 2 weeks after 19970130
average value (arithmetic mean of the samples) = 155 ppb
range = 15 to 487 ppb
flow weighted mean for data with positive flow = 234 ppb
regression: TP conc (ppb) = $70.3588 + 0.360116 \cdot \text{flow (cfs)}$

For s140:

| term | clab | glab | qlab | dbkey | qsign | itype |
|------|------|------|--------|-------|-------|-------|
| s140 | none | S140 | S140_T | 06754 | 1 | 0 |

Flow data from 19960601 to 19970831
Number of no flow days = 169
Number of positive flow days = 285
Total flow (cfs-d) = 87555.984
Number of negative flow days = 3
Total negative flow(cfs-d) = 15.390
No missing flow data

grab sample n = 26

first datum : 19960613
last datum : 19970821
average value (arithmetic mean of the samples) = 45 ppb
range = 22 to 113 ppb
grab sample with positive flow = 21
flow weighted mean for data with positive flow = 43 ppb
regression: TP conc (ppb) = $55.8541 - 0.0291778 \cdot \text{flow (cfs)}$

Table 1b. Seminole/SFWMD Agreement TP load calculation summary.

For positive flow:

| Term | Period | TP value | Flow in kacft | Load in kg |
|-------------|--------------------|-----------------|----------------------|-------------------|
| NFEED | 6/1/1996-8/31/1997 | auto only | 32.043 | 7828.357 |
| USSO | 6/1/1996-2/28/1997 | grab only | 34.991 | 3712.227 |
| USSO | 3/1/1997-8/31/1997 | auto only | 65.859 | 6695.968 |
| S190 | 6/1/1996-8/31/1997 | grab only | 84.927 | 11991.747 |
| L3BRS | 6/1/1996-8/31/1997 | auto only | 181.677 | 51857.465 |
| S140 | 6/1/1996-8/31/1997 | grab only | 173.665 | 9545.575 |

For negative (reverse flow):

| Term | Period | TP value | Flow in kacft | Load in kg |
|-------------|--------------------|-----------------|----------------------|-------------------|
| NFEED | 6/1/1996-8/31/1997 | auto only | -2.515 | -305.254 |
| L3BRS | 6/1/1996-8/31/1997 | auto only | -0.109 | -2.867 |
| S140 | 6/1/1996-8/31/1997 | grab only | -0.031 | -0.921 |

Table 2. Seminole/SFWMD Agreement total phosphorus (TP) load calculation monthly summary by station name for the period: March 1, 1997 - August 31, 1997.

Flows in million cubic meter (kacre-feet)

| station | month | day | flow | load(kg) | fwmc(ppb) | flow_neg | load_neg |
|---------|--------|-----|------------|----------|-----------|--------------|----------|
| NFEED | 199703 | 31 | 0.00(0.00) | 0.00 | N/A | 0.00(0.00) | 0.00 |
| NFEED | 199704 | 30 | 0.1(0.1) | 1.7 | 18 | -0.4(-0.4) | -9.4 |
| NFEED | 199705 | 31 | 0.6(0.5) | 32.1 | 50 | -1.6(-1.3) | -70.8 |
| NFEED | 199706 | 30 | 3.2(2.6) | 262.7 | 83 | -0.1(-0.1) | -9.6 |
| NFEED | 199707 | 31 | 4.6(3.8) | 781.7 | 168 | -0.03(-0.02) | -2.7 |
| NFEED | 199708 | 31 | 6.0(4.9) | 1007.7 | 167 | 0.00(0.00) | 0.00 |
| USO | 199703 | 31 | 1.1(0.9) | 189.7 | 176 | 0.00(0.00) | 0.00 |
| USO | 199704 | 30 | 3.7(3.0) | 427.2 | 114 | 0.00(0.00) | 0.00 |
| USO | 199705 | 31 | 6.9(5.6) | 720.1 | 105 | 0.00(0.00) | 0.00 |
| USO | 199706 | 30 | 9.4(7.6) | 618.2 | 66 | 0.00(0.00) | 0.00 |
| USO | 199707 | 31 | 7.0(5.7) | 382.8 | 55 | 0.00(0.00) | 0.00 |
| USO | 199708 | 31 | 11.1(9.0) | 682.3 | 61 | 0.00(0.00) | 0.00 |
| S190 | 199703 | 31 | 0.00(0.00) | 0.00 | N/A | 0.00(0.00) | 0.00 |
| S190 | 199704 | 30 | 0.4(0.3) | 11.1 | 32 | 0.00(0.00) | 0.00 |
| S190 | 199705 | 31 | 2.5(2.0) | 71.2 | 29 | 0.00(0.00) | 0.00 |
| S190 | 199706 | 30 | 4.4(3.5) | 114.7 | 26 | 0.00(0.00) | 0.00 |
| S190 | 199707 | 31 | 8.9(7.2) | 434.6 | 49 | 0.00(0.00) | 0.00 |
| S190 | 199708 | 31 | 15.4(12.5) | 1472.8 | 95 | 0.00(0.00) | 0.00 |
| L3BRS | 199703 | 31 | 1.1(0.9) | 26.2 | 25 | -0.04(-0.04) | -0.7 |
| L3BRS | 199704 | 30 | 3.3(2.7) | 360.2 | 109 | 0.00(0.00) | 0.00 |
| L3BRS | 199705 | 31 | 9.8(7.9) | 1571.3 | 161 | 0.00(0.00) | 0.00 |
| L3BRS | 199706 | 30 | 13.1(10.6) | 2906.3 | 222 | 0.00(0.00) | 0.00 |
| L3BRS | 199707 | 31 | 12.8(10.4) | 1505.8 | 118 | 0.00(0.00) | 0.00 |
| L3BRS | 199708 | 31 | 25.8(20.9) | 5754.1 | 223 | 0.00(0.00) | 0.00 |
| S140 | 199703 | 31 | 0.00(0.00) | 0.00 | N/A | 0.00(0.00) | 0.00 |
| S140 | 199704 | 30 | 5.5(4.4) | 326.4 | 60 | 0.00(0.00) | 0.00 |
| S140 | 199705 | 31 | 11.7(9.5) | 923.1 | 79 | 0.00(0.00) | 0.00 |
| S140 | 199706 | 30 | 26.4(21.4) | 1124.9 | 43 | 0.00(0.00) | 0.00 |
| S140 | 199707 | 31 | 24.6(19.9) | 1051.9 | 43 | 0.00(0.00) | 0.00 |
| S140 | 199708 | 31 | 32.5(26.4) | 1244.7 | 38 | 0.00(0.00) | 0.00 |

Figure 2. L3BRS TP Load, Flow and TP Concentration

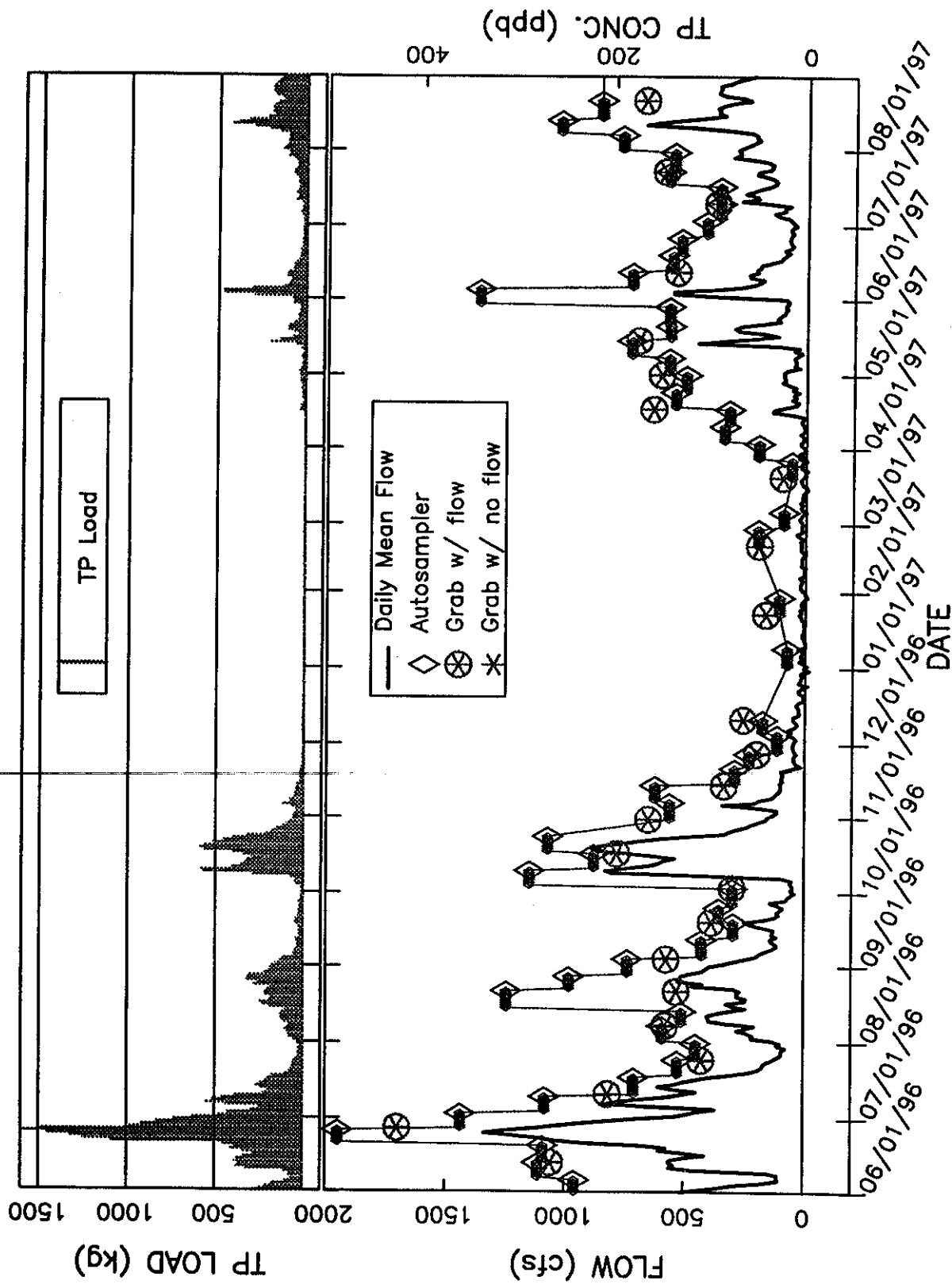
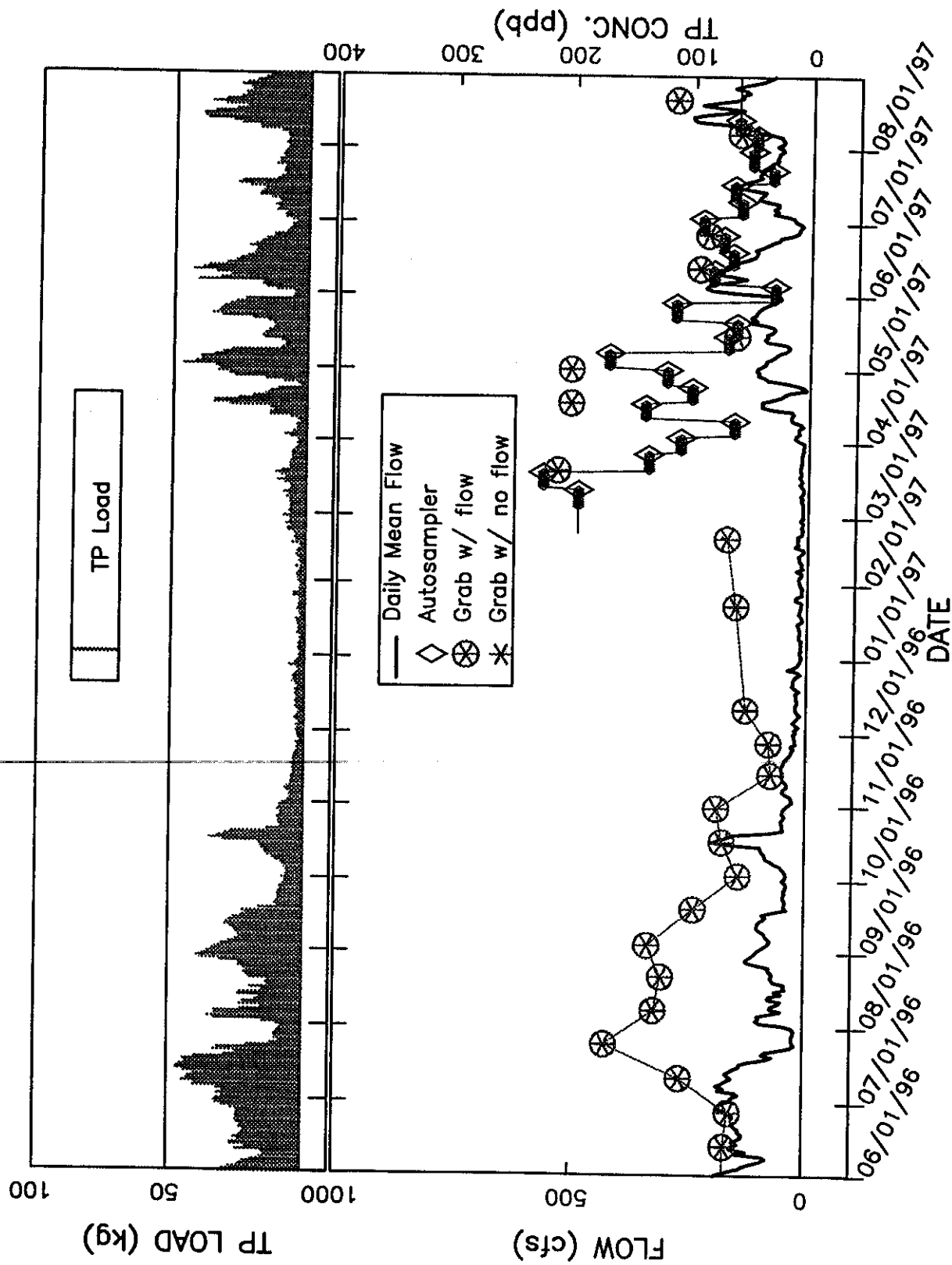


Figure 3. USSO TP Load, Flow and TP Concentration



tube was raised from near the bottom of the canal to mid-depth to avoid sampling sediment particles that were not going over the weir. Grab samples at 1.5 feet below the surface were collected at the auto-sampler site beginning April 17, 1997 to better represent the water going over the weir. A new sampling dock at the weir was constructed and grab sampling at the weir (site name WWEIR) commenced October 9, 1997. An auto-sampler will be installed with an intake tube located on the weir crest by the end of December 1997. Furthermore, the weir will be improved during this dry season so that the crest is straight and level. This should allow weeds to more easily flow over the weir and provide a more accurate flow calculation by a new weir equation. The auto-sampler will be triggered by flows calculated using the new weir equation. After the weir site is completely functional and enough data is generated, we will compare the total phosphorus data collected at WWEIR with that from the WFEED site to determine if there is a significant difference in total phosphorus loads calculated at the two sites.

NFEED

Water flow in the North Feeder Canal is complex and can flow in both directions. When the gate at S190 is closed, the wind and any water entering the North Feeder Canal from the West Feeder Canal just north of S190 can create a circulation pattern that causes both positive and negative velocities to be measured by the UVM. These positive and negative velocities are translated into positive and negative flows at times when there is no net discharge past the UVM site. For the entire reporting period, the flows were estimated to be zero from 11/20/96 to 04/22/97 because the S190 gate was closed during this period (Figure 4). At times of discharge through S190 both positive and negative flows also occur at the NFEED UVM site. For this reason both positive and negative flows are reported and the associated positive and negative total phosphorus loads are calculated and included in the data set. It is important to note that the auto-sampler does not take a water sample when the UVM is recording negative flows. This ensures that a volume of water is not sampled more than once as it flows back and forth past the sampling site. The calculated load for this entire reporting period was 7828 kg for positive flows and 305 kg for negative flows based on the auto-sampler data. The associated flow weighted mean concentration of total phosphorus data collected by the auto-sampler was 190 ppb. Beginning June 12, 1997 grab sampling was started to supplement the auto-sampler data.

S190

The total phosphorus load calculated for S190 for the entire reporting period was 11,992 kg. Of the 457 days in the reporting period, 247 had positive flow. The load estimate is based only on the 13 grab samples collected during flow events (Figure 5). The associated flow weighted mean concentration of total phosphorus was 134 ppb.

S140

The total phosphorus load calculated for S140 for the entire reporting period was 9546 kg. Of the 457 days in the reporting period, 285 had positive flow. The load estimate is based only on the 21 grab samples collected during flow events (Figure 6). The associated flow weighted mean concentration of total phosphorus was 43 ppb.

Figure 4. NFEED TP Load, Flow and TP Concentration

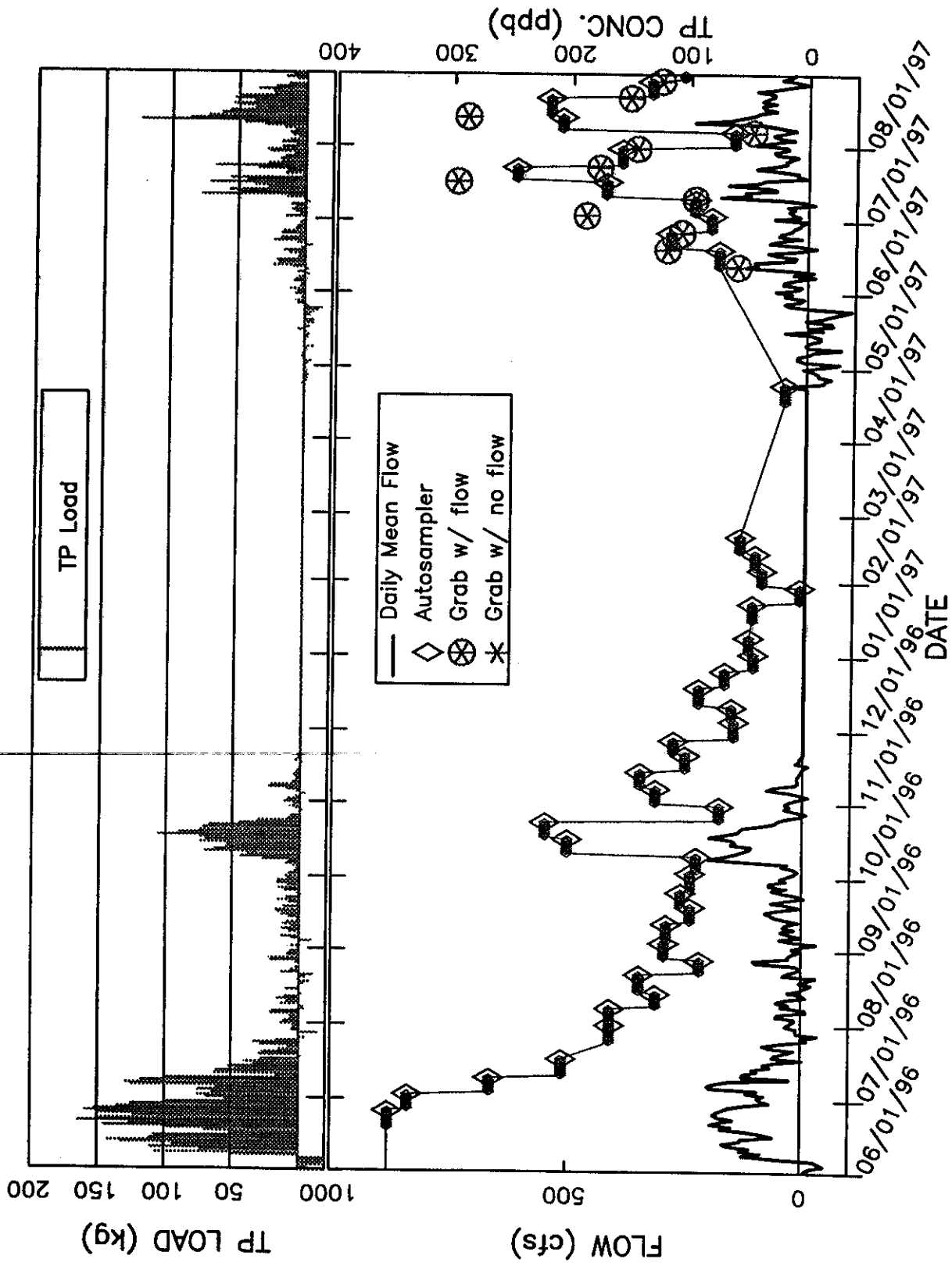


Figure 5. S190 TP Load, Flow and TP Concentration

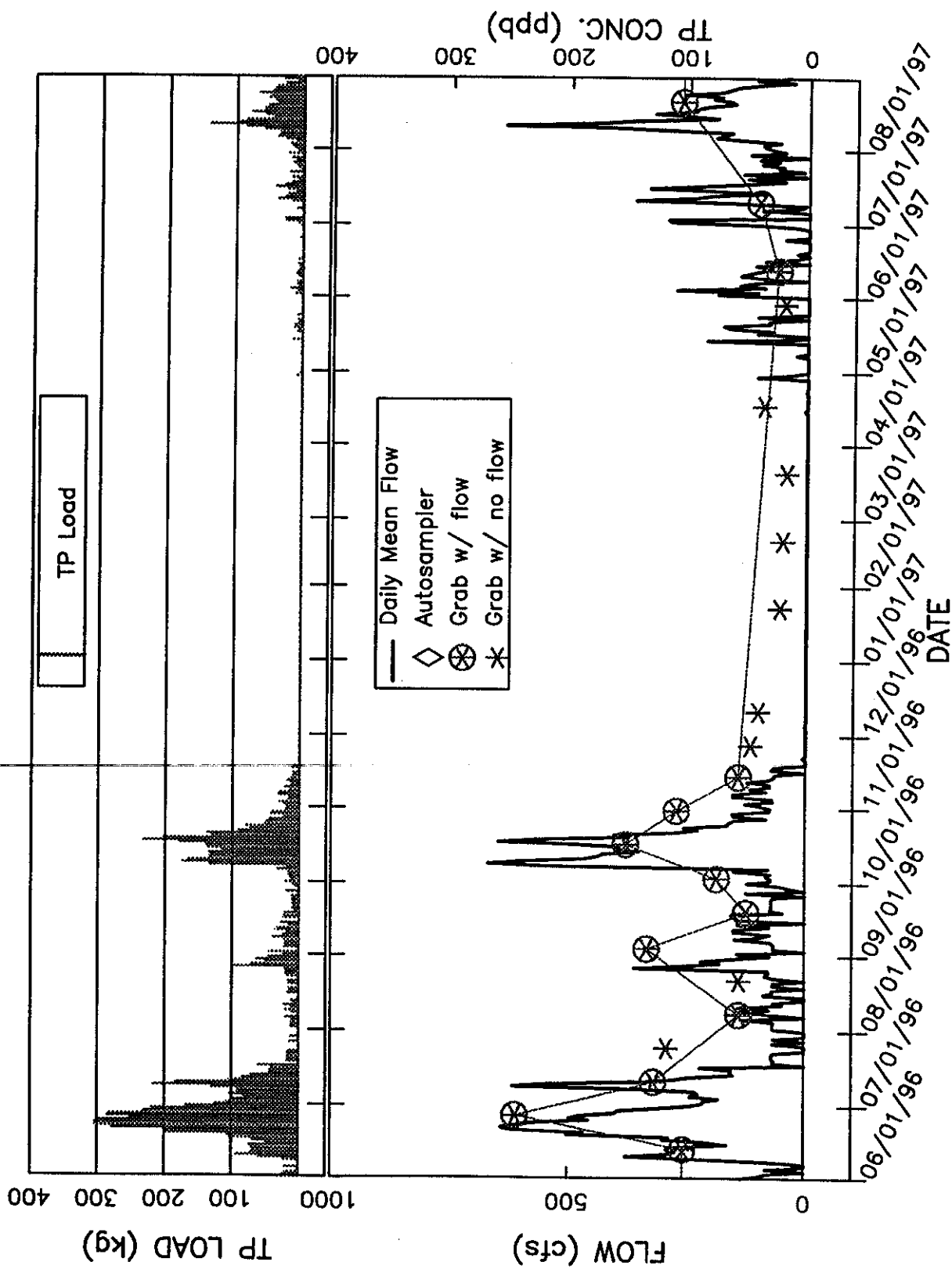
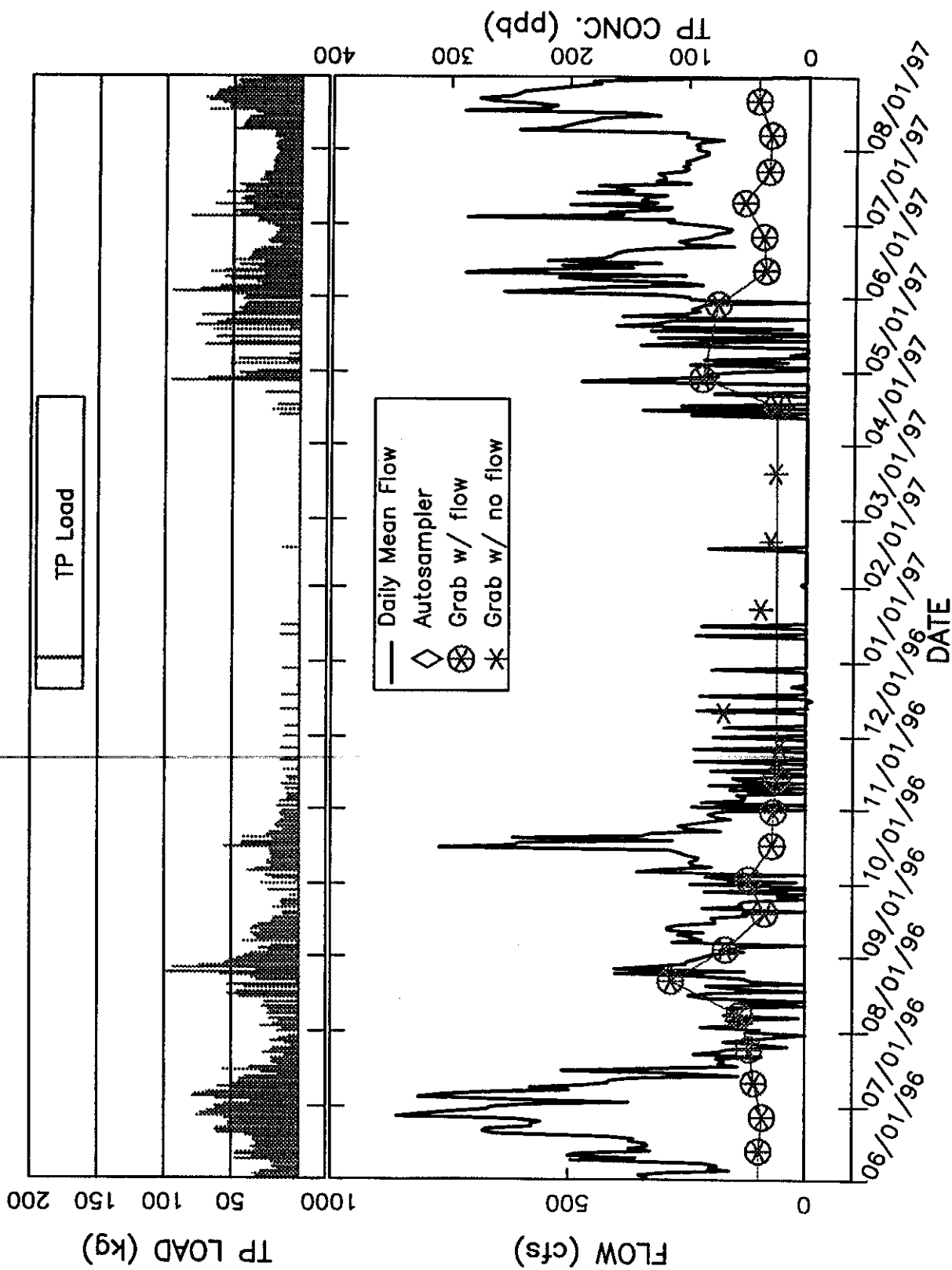


Figure 6. S140 TP Load, Flow and TP Concentration



Results of Flow Comparisons

Similarity of flow data at different sampling locations within a canal is one indication as to whether different measuring methods are providing essentially the same data. Flow in the L28 Interceptor Canal is measured by the USGS at the southern boundary of the Big Cypress Seminole Indian Reservation (site L28IN) and at the western boundary of the Miccosukee Reservation (site L28IS). The S-190 spillway located within the Seminole Reservation is controlled by the District and determines the flow in the L28I canal. Figure 7 presents the flow data at these three sites from March 1, 1997 through August 31, 1997. It can be observed that the flows at L28IN and L28IS correlate very well with the flow from S-190. When the S-190 gate is closed or open for a short period of time, negative flows (less than zero cfs) occur frequently at both downstream stations. These negative flows are most likely wind driven.

In Figure 8 the L-28 Canal flow measured at the USSO site is compared with flow at L28U. The highs and lows in the flow pattern correlate fairly well but flow at L28U is more variable than at USSO. In addition, the flow at L28U became higher than that at USSO as the wet season progressed. This observation suggests that there are inflows to the L28 Canal during wetter periods from ground water seepage or surface inflow in lower areas that do not contribute during dry periods. A more sophisticated analysis of this flow data will be presented in the next report.

Water Quality Data

The water quality data collected by grab sampling at L3BRS, NFEED, S-140, S-190 and USSO are summarized in Tables 3 through 7, respectively. The tables were organized to present basic statistics for each parameter collected in accordance with Table 1.2 in the Standard Operating Procedures for Water Quality Collection in Support of the Big Cypress Seminole Indian Reservation Water Quality Agreement, Water Quality Monitoring Division, SFWMD, May 22, 1996 as well as the associated water quality criterion for those parameters listed in the table of Surface Water Quality Criteria, Chapter 62-302.530, F.A.C.

Comparison of the data with the criteria indicated that dissolved oxygen was the only parameter that exceeded its criterion and that dissolved oxygen exceedences occurred at all sites.

Figure 7a. Comparison of L28IN, L28IS Flows w/ S190 Flow: 3/1/97-5/31/97

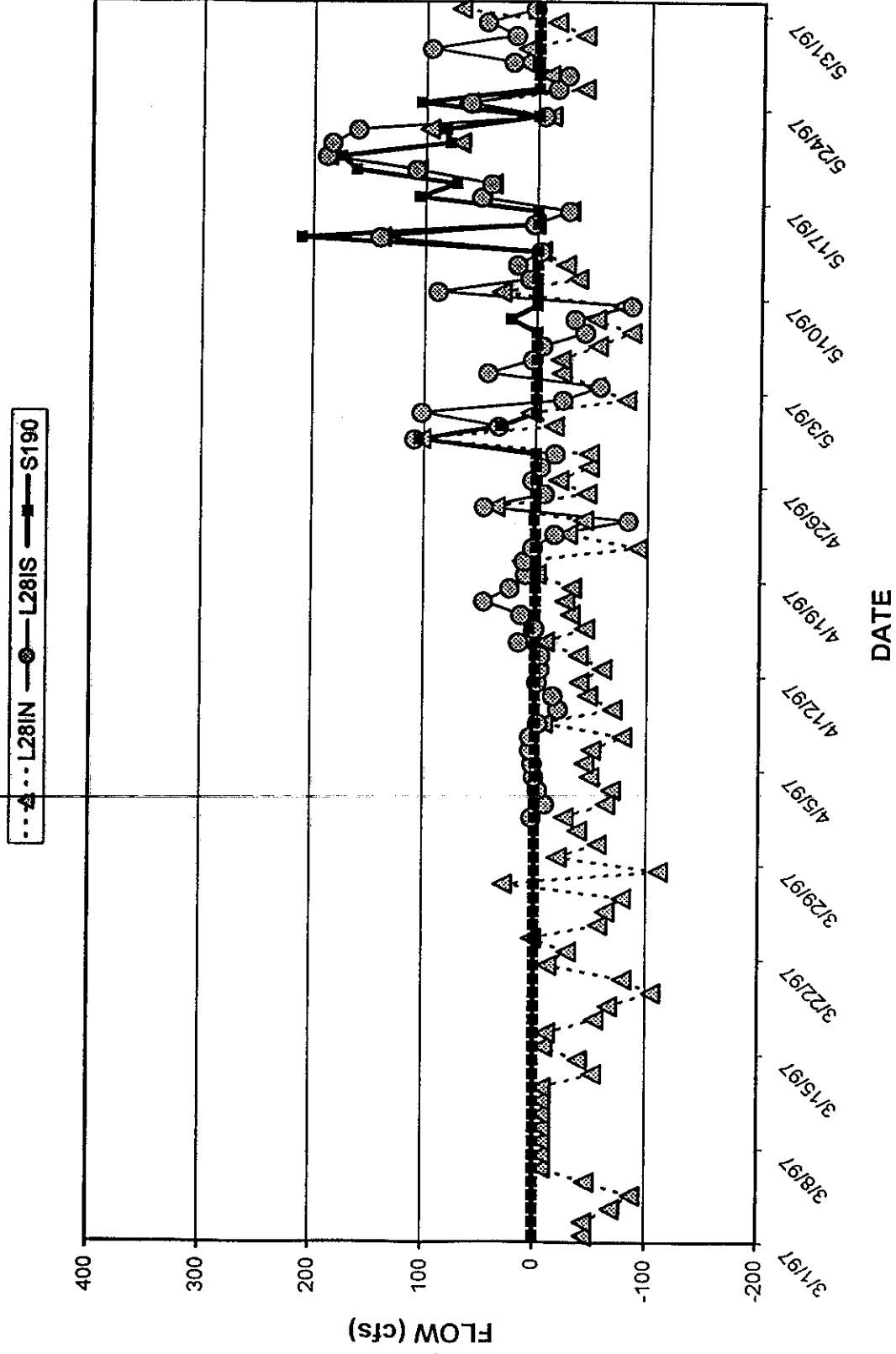


Figure 7b. Comparison of L28IN, L28IS Flows w/ S190 Flow: 6/1/97-8/31/97

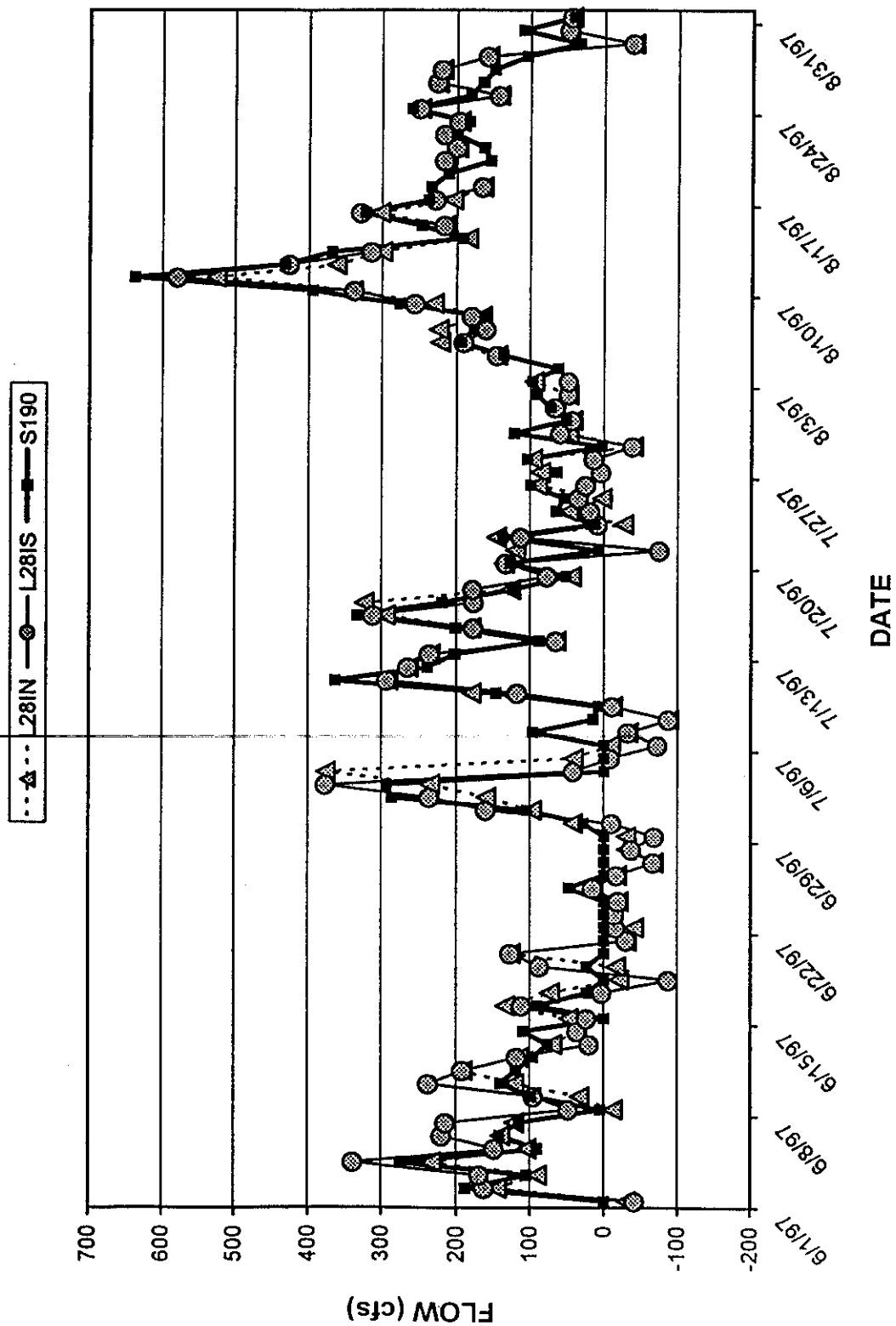


Figure 8. Comparison of L28U Flow with USSO Flow

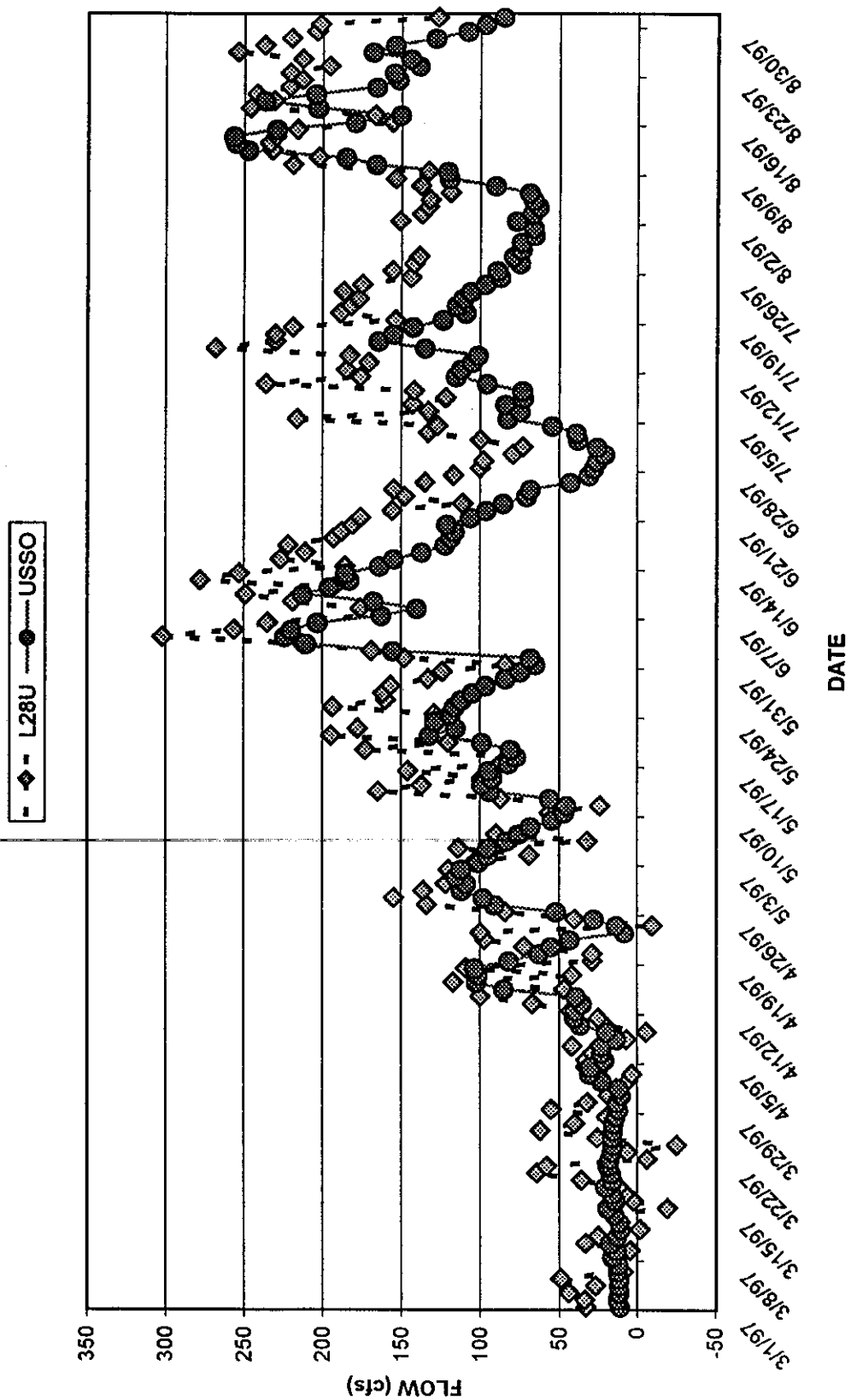


Table 3. Summary of Water Quality Parameters Collected by Grab Sampling at Station L3BRS for the Period from June 1996 through August 1997.

| Parameters | Mean | Range | Standard Deviation | Number of Samples | Criteria for Class III Predominantly Fresh Surface Waters, FAC 62-302 |
|---------------------------------|-------|----------------|--------------------|-------------------|--|
| Physical | | | | | |
| Water Temperature (°C) | 26.6 | 18.4 - 31.3 | 4.1 | 25 | Not Applicable |
| Specific Conductance (µmhos/cm) | 485 | 321 - 631 | 91 | 25 | Not greater than 50% above background or 1,275 µmhos/cm |
| Total Suspended Solids (mg/L) | 4.5 | <3 - 7 | 1.9 | 4 | Not Applicable |
| Turbidity (NTU) | 2.1 | 0.9 - 5.2 | 1.1 | 23 | Less than or equal to 29 NTU above background |
| Dissolved Oxygen (mg/L) | 4.4 | 0.4 - 7.7 | 2.0 | 24 | Not be less than 5.0 mg/L |
| Dissolved Oxygen (% Saturation) | 51.8 | 4.7 - 96.3 | 22.4 | 23 | Not Applicable |
| Water pH | 7.4 | 6.9 - 8.0 | 0.3 | 25 | Not less than 6.0 or greater than 8.5 units |
| Apparent Color (PCU) | 126 | 64 - 242 | 46 | 23 | Not Applicable |
| Total Hardness (mg/L) | 188 | 153 - 221 | 35 | 4 | Not Applicable |
| Major Ions | | | | | |
| Calcium (mg/L) | 64.1 | 51.8 - 74.9 | 11.8 | 4 | Not Applicable |
| Sodium (mg/L) | 31.5 | 22.0 - 42.9 | 10.7 | 4 | Not Applicable |
| Potassium (mg/L) | 4.2 | 3.2 - 6.2 | 1.4 | 4 | Not Applicable |
| Magnesium (mg/L) | 6.8 | 5.4 - 8.3 | 1.5 | 4 | Not Applicable |
| Total Alkalinity (mg/L) | 169.5 | 112.9 - 220.6 | 32.7 | 23 | Not less than 20 mg/L |
| Chloride (mg/L) | 41.7 | 22.6 - 69.6 | 12.6 | 23 | Not greater than 10% of background |
| Nutrients | | | | | |
| Ammonium (mg/L) | 0.075 | 0.017 - 0.158 | 0.042 | 20 | Not Applicable |
| Nitrate+nitrite (mg/L) | 0.115 | <0.006 - 0.213 | 0.054 | 22 | Not Applicable |
| Total Nitrogen (mg/L) | 1.50 | 1.21 - 1.97 | 0.42 | 20 | Not Applicable |
| Orthophosphate (mg/L) | 0.106 | 0.015 - 0.302 | 0.071 | 22 | Not Applicable |
| Total Phosphorus (mg/L) | 0.137 | 0.024 - 0.425 | 0.085 | 24 | Not Applicable |
| Silica (mg/L) | 8.3 | 3.3 - 12.6 | 3.8 | 4 | Not Applicable |
| Trace Elements | | | | | |
| Arsenic (µg/L) | <1.5 | - | | 1 | Less than or equal to 50 µg/L |
| Cadmium (µg/L) | 0.4 | 0.4 - 0.4 | | 2 | Less than or equal to calculated value using: $e^{(0.7852 \ln(1+3.48))}$ |
| Copper (µg/L) | 1.7 | 1.3 - 2.2 | | 2 | Less than or equal to calculated value using: $e^{(0.8545 \ln(1+1.465))}$ |
| Iron (µg/L) | 318 | 98 - 745 | 284 | 5 | Less than or equal to 1,000 µg/L |
| Lead (µg/L) | <0.8 | <0.8 - <0.8 | | 2 | Less than or equal to calculated value using: $e^{(1.273 \ln(1+4.795))}$ |
| Zinc (µg/L) | <4 | <4 - <4 | | 2 | Less than or equal to calculated value using: $e^{(0.8473 \ln(1+0.7614))}$ |

Table 4. Summary of Water Quality Parameters Collected by Grab Sampling at Station NFEED for the Period from June 1996 through August 1997.

| Parameters | Mean | Range | Standard Deviation | Number of Samples | Criteria for Class III Predominantly Fresh Surface Waters, FAC 62-302 |
|---------------------------------|-------|---------------|--------------------|-------------------|--|
| Physical | | | | | |
| Water Temperature (°C) | 30.2 | 29.0 - 31.4 | 0.7 | 13 | Not Applicable |
| Specific Conductance (µmhos/cm) | 368 | 0.438 - 478 | 165 | 13 | Not greater than 50% above background or 1,275 µmhos/cm |
| Total Suspended Solids (mg/L) | | - | | | Not Applicable |
| Turbidity (NTU) | | - | | | Less than or equal to 29 NTU above background |
| Dissolved Oxygen (mg/L) | 3.2 | 1.2 - 5.0 | 1.3 | 13 | Not be less than 5.0 mg/L |
| Dissolved Oxygen (% Saturation) | 40.8 | 15.5 - 63.6 | 16.3 | 13 | Not Applicable |
| Water pH | 7.2 | 6.9 - 7.4 | 0.1 | 13 | Not less than 6.0 or greater than 8.5 units |
| Apparent Color (PCU) | | - | | | Not Applicable |
| Total Hardness (mg/L) | | - | | | Not Applicable |
| Major Ions | | | | | |
| Calcium (mg/L) | | - | | | Not Applicable |
| Sodium (mg/L) | | - | | | Not Applicable |
| Potassium (mg/L) | | - | | | Not Applicable |
| Magnesium (mg/L) | | - | | | Not Applicable |
| Total Alkalinity (mg/L) | | - | | | Not less than 20 mg/L |
| Chloride (mg/L) | | - | | | Not greater than 10% of background |
| Nutrients | | | | | |
| Ammonium (mg/L) | 0.024 | - | | 1 | Not Applicable |
| Nitrate+nitrite (mg/L) | 0.029 | - | | 1 | Not Applicable |
| Total Nitrogen (mg/L) | | - | | | Not Applicable |
| Orthophosphate (mg/L) | | - | | | Not Applicable |
| Total Phosphorus (mg/L) | 0.140 | 0.014 - 0.297 | 0.084 | 13 | Not Applicable |
| Silica (mg/L) | | - | | | Not Applicable |
| Trace Elements | | | | | |
| Arsenic (µg/L) | | - | | | Less than or equal to 50 µg/L |
| Cadmium (µg/L) | | - | | | Less than or equal to calculated value using: $e^{(0.7852 \ln(1-3.49))}$ |
| Copper (µg/L) | | - | | | Less than or equal to calculated value using: $e^{(0.8549 \ln(1-1.465))}$ |
| Iron (µg/L) | | - | | | Less than or equal to 1,000 µg/L |
| Lead (µg/L) | | - | | | Less than or equal to calculated value using: $e^{(1.273 \ln(1-4.705))}$ |
| Zinc (µg/L) | | - | | | Less than or equal to calculated value using: $e^{(0.8473 \ln(1-0.7614))}$ |

Table 5. Summary of Water Quality Parameters Collected by Grab Sampling at Station S140 for the Period from June 1996 through August 1997.

| Parameters | Mean | Range | Standard Deviation | Number of Samples | Criteria for Class III Predominantly Fresh Surface Waters, FAC 62-302 |
|---------------------------------|--------|----------------|--------------------|-------------------|--|
| Physical | | | | | |
| Water Temperature (°C) | 26.7 | 18.8 - 30.9 | 3.5 | 26 | Not Applicable |
| Specific Conductance (µmhos/cm) | 450 | 349 - 550 | 52 | 26 | Not greater than 50% above background or 1,275 µmhos/cm |
| Total Suspended Solids (mg/L) | 3.2 | <3 - 4 | 0.4 | 5 | Not Applicable |
| Turbidity (NTU) | 1.5 | 0.7 - 5.2 | 1.0 | 25 | Less than or equal to 29 NTU above background |
| Dissolved Oxygen (mg/L) | 3.1 | 0.8 - 7.9 | 1.9 | 25 | Not be less than 5.0 mg/L |
| Dissolved Oxygen (% Saturation) | 36.8 | 9.5 - 94.8 | 21.8 | 25 | Not Applicable |
| Water pH | 7.3 | 7.0 - 7.9 | 0.3 | 26 | Not less than 6.0 or greater than 8.5 units |
| Apparent Color (PCU) | 78 | 34 - 113 | 20 | 25 | Not Applicable |
| Total Hardness (mg/L) | 213.25 | 193 - 226 | 15 | 4 | Not Applicable |
| Major Ions | | | | | |
| Calcium (mg/L) | 76.3 | 70.8 - 80.0 | 4.0 | 4 | Not Applicable |
| Sodium (mg/L) | 22.8 | 16.4 - 32.6 | 6.0 | 5 | Not Applicable |
| Potassium (mg/L) | 3.2 | 2.6 - 4.1 | 0.7 | 4 | Not Applicable |
| Magnesium (mg/L) | 5.5 | 4.0 - 7.5 | 1.5 | 4 | Not Applicable |
| Total Alkalinity (mg/L) | 177.9 | 141.3 - 209.9 | 19.1 | 25 | Not less than 20 mg/L |
| Chloride (mg/L) | 28.6 | 19.7 - 50.1 | 7.3 | 25 | Not greater than 10% of background |
| Nutrients | | | | | |
| Ammonium (mg/L) | 0.063 | <0.009 - 0.191 | 0.043 | 22 | Not Applicable |
| Nitrate+nitrite (mg/L) | 0.058 | <0.004 - 0.591 | 0.121 | 22 | Not Applicable |
| Total Nitrogen (mg/L) | 1.40 | 0.96 - 2.73 | 0.48 | 19 | Not Applicable |
| Orthophosphate (mg/L) | 0.016 | <0.004 - 0.049 | 0.010 | 25 | Not Applicable |
| Total Phosphorus (mg/L) | 0.043 | 0.022 - 0.113 | 0.020 | 25 | Not Applicable |
| Silica (mg/L) | 6.2 | 2.0 - 9.4 | 2.9 | 5 | Not Applicable |
| Trace Elements | | | | | |
| Arsenic (µg/L) | <1.8 | - | | 1 | Less than or equal to 50 µg/L |
| Cadmium (µg/L) | 0.3 | <0.3 - 0.3 | | 2 | Less than or equal to calculated value using: $e^{(0.7852)(n-1-3.45)}$ |
| Copper (µg/L) | 3.0 | <1.2 - 4.8 | | 2 | Less than or equal to calculated value using: $e^{(0.8549)(n-1-1.465)}$ |
| Iron (µg/L) | 223 | 99 - 383 | 109 | 5 | Less than or equal to 1,000 µg/L |
| Lead (µg/L) | <0.8 | <0.8 - <0.8 | | 2 | Less than or equal to calculated value using: $e^{(1.273)(n-1-4.705)}$ |
| Zinc (µg/L) | 5 | <4 - 6 | | 2 | Less than or equal to calculated value using: $e^{(0.8473)(n-1-0.7614)}$ |

Table 6. Summary of Water Quality Parameters Collected by Grab Sampling at Station S190 for the Period from June 1996 through August 1997.

| Parameters | Mean | Range | Standard Deviation | Number of Samples | Criteria for Class III Predominantly Fresh Surface Waters, FAC 62-302 |
|---------------------------------|-------|----------------|--------------------|-------------------|--|
| Physical | | | | | |
| Water Temperature (°C) | 26.7 | 17.8 - 31.8 | 4.2 | 23 | Not Applicable |
| Specific Conductance (µmhos/cm) | 564 | 360 - 742 | 103 | 23 | Not greater than 50% above background or 1,275 µmhos/cm |
| Total Suspended Solids (mg/L) | 3.3 | <3 - 4 | 0.5 | 4 | Not Applicable |
| Turbidity (NTU) | 1.9 | 0.8 - 4.0 | 0.8 | 21 | Less than or equal to 29 NTU above background |
| Dissolved Oxygen (mg/L) | 4.9 | 0.7 - 9.0 | 2.0 | 22 | Not be less than 5.0 mg/L |
| Dissolved Oxygen (% Saturation) | 59.2 | 9.4 - 105.0 | 21.9 | 21 | Not Applicable |
| Water pH | 7.5 | 7.1 - 7.8 | 0.2 | 23 | Not less than 6.0 or greater than 8.5 units |
| Apparent Color (PCU) | 81 | 42 - 150 | 27 | 21 | Not Applicable |
| Total Hardness (mg/L) | 241 | 182 - 293 | 51 | 4 | Not Applicable |
| Major Ions | | | | | |
| Calcium (mg/L) | 82.7 | 64.1 - 99.3 | 15.4 | 4 | Not Applicable |
| Sodium (mg/L) | 33.5 | 17.4 - 48.0 | 15.9 | 4 | Not Applicable |
| Potassium (mg/L) | 3.6 | 2.5 - 4.3 | 0.8 | 4 | Not Applicable |
| Magnesium (mg/L) | 8.3 | 5.3 - 11.2 | 3.1 | 4 | Not Applicable |
| Total Alkalinity (mg/L) | 217.6 | 156.4 - 270.6 | 31.4 | 21 | Not less than 20 mg/L |
| Chloride (mg/L) | 43.0 | 22.7 - 73.5 | 16.2 | 21 | Not greater than 10% of background |
| Nutrients | | | | | |
| Ammonium (mg/L) | 0.028 | <0.009 - 0.096 | 0.024 | 18 | Not Applicable |
| Nitrate+nitrite (mg/L) | 0.028 | <0.004 - 0.102 | 0.025 | 21 | Not Applicable |
| Total Nitrogen (mg/L) | 1.20 | 0.75 - 1.86 | 0.26 | 18 | Not Applicable |
| Orthophosphate (mg/L) | 0.039 | 0.005 - 0.188 | 0.046 | 20 | Not Applicable |
| Total Phosphorus (mg/L) | 0.075 | 0.017 - 0.244 | 0.056 | 22 | Not Applicable |
| Silica (mg/L) | 8.2 | 7.3 - 9.2 | 0.8 | 4 | Not Applicable |
| Trace Elements | | | | | |
| Arsenic (µg/L) | <1.5 | - | | 1 | Less than or equal to 50 µg/L |
| Cadmium (µg/L) | 0.3 | <0.3 - 0.3 | | 2 | Less than or equal to calculated value using: $e^{(0.7852(\ln(0.3)-0.49))}$ |
| Copper (µg/L) | 1.3 | <1.2 - 1.4 | | 2 | Less than or equal to calculated value using: $e^{(0.8545(\ln(1.4)-1.465))}$ |
| Iron (µg/L) | 201 | 72 - 433 | 170 | 5 | Less than or equal to 1,000 µg/L |
| Lead (µg/L) | <0.8 | <0.8 - <0.8 | | 2 | Less than or equal to calculated value using: $e^{(1.272(\ln(0.8)-4.705))}$ |
| Zinc (µg/L) | <4 | <4 - <4 | | 2 | Less than or equal to calculated value using: $e^{(0.8473(\ln(4)-0.7614))}$ |

Table 7. Summary of Water Quality Parameters Collected by Grab Sampling at Station USSO for the Period from June 1996 through August 1997.

| Parameters | Mean | Range | Standard Deviation | Number of Samples | Criteria for Class III Predominantly Fresh Surface Waters, FAC 62-302 |
|---------------------------------|--------|----------------|--------------------|-------------------|--|
| Physical | | | | | |
| Water Temperature (°C) | 25.4 | 18.3 - 30.5 | 3.7 | 26 | Not Applicable |
| Specific Conductance (µmhos/cm) | 502 | 400 - 582 | 44 | 26 | Not greater than 50% above background or 1,275 µmhos/cm |
| Total Suspended Solids (mg/L) | 3.2 | <3 - 4 | 0.4 | 5 | Not Applicable |
| Turbidity (NTU) | 1.3 | 0.4 - 5.5 | 1.0 | 25 | Less than or equal to 29 NTU above background |
| Dissolved Oxygen (mg/L) | 4.5 | 0.2 - 7.3 | 1.6 | 25 | Not be less than 5.0 mg/L |
| Dissolved Oxygen (% Saturation) | 53.3 | 2.8 - 87.5 | 18.5 | 25 | Not Applicable |
| Water pH | 7.1 | 6.7 - 7.8 | 0.2 | 26 | Not less than 6.0 or greater than 8.5 units |
| Apparent Color (PCU) | 100 | 56 - 145 | 22 | 25 | Not Applicable |
| Total Hardness (mg/L) | 218.25 | 194 - 256 | 28 | 4 | Not Applicable |
| Major Ions | | | | | |
| Calcium (mg/L) | 79.3 | 71.0 - 93.8 | 10.3 | 4 | Not Applicable |
| Sodium (mg/L) | 22.1 | 18.6 - 27.3 | 4.1 | 4 | Not Applicable |
| Potassium (mg/L) | 5.4 | 4.2 - 8.5 | 2.1 | 4 | Not Applicable |
| Magnesium (mg/L) | 4.9 | 4.0 - 6.2 | 1.0 | 4 | Not Applicable |
| Total Alkalinity (mg/L) | 177.5 | 145.1 - 215.9 | 18.3 | 25 | Not less than 20 mg/L |
| Chloride (mg/L) | 34.8 | 26.2 - 53.9 | 6.6 | 25 | Not greater than 10% of background |
| Nutrients | | | | | |
| Ammonium (mg/L) | 0.072 | 0.024 - 0.221 | 0.054 | 21 | Not Applicable |
| Nitrate+nitrite (mg/L) | 0.033 | <0.004 - 0.168 | 0.036 | 24 | Not Applicable |
| Total Nitrogen (mg/L) | 1.35 | 0.99 - 1.87 | 0.23 | 20 | Not Applicable |
| Orthophosphate (mg/L) | 0.067 | 0.013 - 0.190 | 0.041 | 25 | Not Applicable |
| Total Phosphorus (mg/L) | 0.098 | 0.030 - 0.214 | 0.052 | 25 | Not Applicable |
| Silica (mg/L) | 7.1 | 4.5 - 8.9 | 1.6 | 5 | Not Applicable |
| Trace Elements | | | | | |
| Arsenic (µg/L) | 1.6 | <1.5 - 1.6 | | 2 | Less than or equal to 50 µg/L |
| Cadmium (µg/L) | <0.3 | <0.3 - <0.3 | | 3 | Less than or equal to calculated value using: $e^{(0.7852(\ln(1.5-0.49))}$ |
| Copper (µg/L) | <1.2 | <1.2 - <1.2 | | 3 | Less than or equal to calculated value using: $e^{(0.8545(\ln(1.4-0.5))}$ |
| Iron (µg/L) | 187 | 79 - 373 | 110 | 6 | Less than or equal to 1,000 µg/L |
| Lead (µg/L) | <0.8 | <0.8 - <0.8 | | 3 | Less than or equal to calculated value using: $e^{(1.273(\ln(1.4-0.5))}$ |
| Zinc (µg/L) | <4 | <4 - <4 | | 3 | Less than or equal to calculated value using: $e^{(0.8473(\ln(1.0-0.7614))}$ |

Appendix I. Job control file for the load calculation program run.

```

'Seminole/SFWMD'
'semflow.lis'      'flowtab.out'
'semtp.lis'        '= input concentration file'
7                  '= nmaxc (max days for composite sample allocation)'
19960601           '= dbase (first date for load calculation)'
'seminv.out'       '= load calculation data inventory file'
'semday.out'       '= daily output file'
'semmon.out'       '= monthly output file (term and month)'
'semtab.out'       '= output cross-tabulation (term by month)'
'term      comp      grab      flow      dbkey  qsign  itype  iymdcomp'
'nfeed'    'NFEED'    'NFEED'    'NFEED_O' '16754'   1    1    19960619
'usso'     'USSO'     'USSO'     'USSO_O'  '16749'   1    2    19970301
'l3brs'    'USL3BRS'  'L3BRS'    'L3BRS_O' '16245'   1    1    19841030
's190'     'none'       'S190'     'S190_S'  '15987'   1    0    99999999
's140'     'none'       'S140'     'S140_T'  '06754'   1    0    99999999
'l28u'     'L28U'      'BCS7'     'L28U_O'  'FF811'   1    1    99999999
'l28in'    'L28IN'      'BSC5'     'L28IN_O' 'FF810'   1    1    99999999
'l28is'    'L28IS'    'L28I@175' 'L28IS_O' 'FF813'   1    1    99999999

```

Remarks:

itype 0: use grab sample TP for load calculation.

itype 1: use autosampler composite TP for load calculation.

itype 2: use grab sample TP until 'iymdcomp' then use autosampler composite TP.

Appendix II. Total phosphorus data for the period: March 1, 1997 - August 31, 1997.

For Northfeeder:

(1) Flow proportional autosampler TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| NFEED | CAMB | 19970424 | 24 | 0.018 |
| NFEED | CAMB | 19970619 | 24 | 0.075 |
| NFEED | CAMB | 19970626 | 24 | 0.116 |
| NFEED | CAMB | 19970703 | 24 | 0.082 |
| NFEED | CAMB | 19970710 | 24 | 0.096 |
| NFEED | CAMB | 19970717 | 24 | 0.171 |
| NFEED | CAMB | 19970723 | 24 | 0.247 |
| NFEED | CAMB | 19970731 | 24 | 0.158 |
| NFEED | CAMB | 19970807 | 24 | 0.063 |
| NFEED | SEMI | 19970813 | 24 | 0.209 |
| NFEED | SEMI | 19970821 | 24 | 0.219 |
| NFEED | SEMI | 19970828 | 24 | 0.133 |
| NFEED | SEMI | 19970904 | 24 | 0.106 |
| NFEED | SEMI | 19970918 | 24 | 0.132 |
| NFEED | SEMI | 19970925 | 24 | 0.104 |

(2) Grab sample TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| NFEED | CAMB | 19970612 | 0 | 0.059 |
| NFEED | CAMB | 19970619 | 0 | 0.119 |
| NFEED | CAMB | 19970626 | 0 | 0.107 |
| NFEED | CAMB | 19970703 | 0 | 0.188 |
| NFEED | CAMB | 19970710 | 0 | 0.096 |
| NFEED | CAMB | 19970717 | 0 | 0.297 |
| NFEED | CAMB | 19970723 | 0 | 0.177 |
| NFEED | CAMB | 19970731 | 0 | 0.145 |
| NFEED | CAMB | 19970807 | 0 | 0.047 |
| NFEED | SEMI | 19970813 | 0 | 0.289 |
| NFEED | SEMI | 19970821 | 0 | 0.151 |
| NFEED | SEMI | 19970828 | 0 | 0.125 |

Appendix II. (continued)

For L3BRS:

(1) Flow proportional autosampler TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| USL3BRS | CAMB | 19970306 | 24 | 0.023 |
| USL3BRS | CAMB | 19970327 | 24 | 0.015 |
| USL3BRS | CAMB | 19970403 | 24 | 0.049 |
| USL3BRS | CAMB | 19970410 | 24 | 0.085 |
| USL3BRS | CAMB | 19970417 | 24 | 0.080 |
| USL3BRS | CAMB | 19970424 | 24 | 0.136 |
| USL3BRS | CAMB | 19970501 | 24 | 0.125 |
| USL3BRS | CAMB | 19970508 | 24 | 0.143 |
| USL3BRS | CAMB | 19970515 | 24 | 0.182 |
| USL3BRS | CAMB | 19970521 | 24 | 0.142 |
| USL3BRS | CAMB | 19970529 | 24 | 0.143 |
| USL3BRS | CAMB | 19970605 | 24 | 0.341 |
| USL3BRS | CAMB | 19970612 | 24 | 0.182 |
| USL3BRS | CAMB | 19970619 | 24 | 0.140 |
| USL3BRS | CAMB | 19970626 | 24 | 0.131 |
| USL3BRS | CAMB | 19970703 | 24 | 0.105 |
| USL3BRS | CAMB | 19970710 | 24 | 0.091 |
| USL3BRS | CAMB | 19970717 | 24 | 0.091 |
| USL3BRS | CAMB | 19970723 | 24 | 0.144 |
| USL3BRS | CAMB | 19970731 | 24 | 0.139 |
| USL3BRS | CAMB | 19970807 | 24 | 0.193 |
| USL3BRS | CAMB | 19970813 | 24 | 0.257 |
| USL3BRS | CAMB | 19970821 | 24 | 0.215 |
| USL3BRS | CAMB | 19970918 | 24 | 0.131 |
| USL3BRS | CAMB | 19970925 | 24 | 0.102 |

(2) Grab sample TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| L3BRS | CAMB | 19970320 | 0 | 0.024 |
| L3BRS | CAMB | 19970417 | 0 | 0.159 |
| L3BRS | CAMB | 19970501 | 0 | 0.151 |
| L3BRS | CAMB | 19970515 | 0 | 0.175 |
| L3BRS | CAMB | 19970612 | 0 | 0.135 |
| L3BRS | CAMB | 19970710 | 0 | 0.094 |
| L3BRS | CAMB | 19970723 | 0 | 0.148 |
| L3BRS | CAMB | 19970821 | 0 | 0.169 |

Appendix II. (continued)

For USSO:

(1) Flow proportional autosampler TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| USSO | CAMB | 19970312 | 24 | 0.196 |
| USSO | CAMB | 19970319 | 24 | 0.226 |
| USSO | CAMB | 19970327 | 24 | 0.136 |
| USSO | CAMB | 19970403 | 24 | 0.109 |
| USSO | CAMB | 19970410 | 24 | 0.064 |
| USSO | CAMB | 19970417 | 24 | 0.139 |
| USSO | CAMB | 19970424 | 24 | 0.100 |
| USSO | CAMB | 19970501 | 24 | 0.121 |
| USSO | CAMB | 19970508 | 24 | 0.170 |
| USSO | CAMB | 19970515 | 24 | 0.070 |
| USSO | CAMB | 19970521 | 24 | 0.063 |
| USSO | CAMB | 19970529 | 24 | 0.114 |
| USSO | CAMB | 19970605 | 24 | 0.031 |
| USSO | CAMB | 19970612 | 24 | 0.083 |
| USSO | CAMB | 19970619 | 24 | 0.067 |
| USSO | CAMB | 19970626 | 24 | 0.075 |
| USSO | CAMB | 19970703 | 24 | 0.092 |
| USSO | CAMB | 19970710 | 24 | 0.060 |
| USSO | CAMB | 19970717 | 24 | 0.066 |
| USSO | CAMB | 19970723 | 24 | 0.034 |
| USSO | CAMB | 19970731 | 24 | 0.051 |
| USSO | CAMB | 19970807 | 24 | 0.048 |
| USSO | CAMB | 19970813 | 24 | 0.063 |
| USSO | CAMB | 19970821 | 24 | 0.740* |
| USSO | CAMB | 19970918 | 24 | 0.110 |
| USSO | CAMB | 19970925 | 24 | 0.092 |

* denotes a sample deemed to be questionable and not included in the analysis or load calculation.

(2) Grab sample TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| USSO | CAMB | 19970320 | 0 | 0.214 |
| USSO | CAMB | 19970417 | 0 | 0.203 |
| USSO | CAMB | 19970501 | 0 | 0.203 |
| USSO | CAMB | 19970515 | 0 | 0.063 |
| USSO | CAMB | 19970612 | 0 | 0.095 |
| USSO | CAMB | 19970626 | 0 | 0.088 |
| USSO | CAMB | 19970807 | 0 | 0.062 |
| USSO | CAMB | 19970821 | 0 | 0.115 |

Appendix II. (continued)

For S190:

Grab sample TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| S190 | CAMB | 19970320 | 0 | 0.017 |
| S190 | CAMB | 19970417 | 0 | 0.036 |
| S190 | CAMB | 19970529 | 0 | 0.019 |
| S190 | CAMB | 19970612 | 0 | 0.025 |
| S190 | CAMB | 19970710 | 0 | 0.041 |
| S190 | CAMB | 19970821 | 0 | 0.106 |

For S140:

Grab sample TP concentration.

| Station | Project | Date | Sample_Type | TP (ppm) |
|---------|---------|----------|-------------|----------|
| S140 | CAMB | 19970320 | 0 | 0.026 |
| S140 | CAMB | 19970417 | 0 | 0.025 |
| S140 | CAMB | 19970428 | 0 | 0.088 |
| S140 | CAMB | 19970529 | 0 | 0.075 |
| S140 | CAMB | 19970612 | 0 | 0.035 |
| S140 | CAMB | 19970626 | 0 | 0.037 |
| S140 | CAMB | 19970710 | 0 | 0.053 |
| S140 | CAMB | 19970723 | 0 | 0.033 |
| S140 | CAMB | 19970807 | 0 | 0.031 |
| S140 | CAMB | 19970821 | 0 | 0.042 |
| S140 | CAMB | 19970918 | 0 | 0.039 |